

**REMARKS**

The present application includes claims 1-8 and 10-34. Claims 1-8 and 10-34 were rejected by the Examiner. By this Amendment, claims 1, 8, 13, 15, 21-22, and 28 have been amended, and new claims 35-41 have been added.

Claims 13-14 were rejected under 35 U.S.C. §102(b) as being anticipated by Stephen, U.S. Patent No. 4,302,846.

Claims 1-2, 8, 15-18, and 28-29 were rejected under 35 U.S.C. §103(a) as being unpatentable over Herman, U.S. Patent No. 4,670,740, in view of Stephen, U.S. Patent No. 4,302,846.

Claims 1-3, 5, 7-8, 10-12, 15-29, and 32-34 were rejected under 35 U.S.C. §103(a) as being unpatentable over Augenblick, U.S. Patent No. 3,789,642, in view of Carney, U.S. Patent No. 5,446,447, in further view of Stephen, U.S. Patent No. 4,302,846.

Claims 30-31 were rejected under 35 U.S.C. §103(a) as being unpatentable over Augenblick, U.S. Patent No. 3,789,642, in view of Carney, U.S. Patent No. 5,446,447 and Stephen, U.S. Patent No. 4,302,846, in further view of Murdoch, U.S. Patent No. 5,153,583.

Claims 4,6, and 31 were rejected under 35 U.S.C. §103(a) as being unpatentable over Augenblick, U.S. Patent No. 3,789,642, in view of Carney, U.S. Patent No. 5,446,447 and Stephen, U.S. Patent No. 4,302,846, in further view of Walton, U.S. Patent No. 4,918,416.

The Applicant first turns to the rejection of claims 13-14 under 35 U.S.C. 102(b) as being anticipated by Stephen. Stephen relates to a presence detection system. (col. 1, lines 4-7, 49-51). More specifically, Stephen discloses a detection system for “detecting the presence in a checking zone of an article” and “for detecting ... the unauthorised removal of articles.” (col. 1, lines 4-10) (emphasis added).

The system of Stephen uses a marker tag 18 attached to an article of merchandise. (col. 2, lines 35-36). The marker tag 18 includes a receptor reradiator, which includes a tuned resonant circuit 19 tuned to receive two signals from two transmitters 10, 11, along with a non-linear diode 21 and a tuned reradiator circuit 20. (col. 2, lines 35-40). An aerial 15 of a receiver 16 is also located in or adjacent to a zone 14 within which the marker tag 18 operates that is tuned to receive signals radiated by the tuned reradiator circuit 20. (col. 2, lines 40-43).

Thus, the receiver 16 is simply tuned to receive signals from the tuned reradiator circuit 20 of the marker tag 18 to detect generally whether the marker tag 18 and its associated merchandise have exited the allowed zone 14. More specifically, as a tag is brought closer to a receiver, the detected field strength increases and then decreases again once the tag has passed through the doorway. (col. 9, lines 20-26). The receiver indicated a change in position from a central position to an extreme position and then back to a central position. (col. 9, lines 26-28).

Such a task does not require determination of position and orientation of a transponder in relation to a reference coordinate system in a wireless electromagnetic tracking system, as recited in claim 13. Rather, a receiver of the system in Fig. 3, determines the magnitude of distance of a tag from a transmitter. Furthermore, the positioning system in Fig 3 indicates a change in tag position when the magnitude of the field strength increases to a maximum value, then decreases. (col. 9, lines 26-31). The system of Fig. 3 only detects differences in the magnitude of distance of the tag from the receiver. Furthermore, the system in Fig. 3 indicates a change in position when the distance, and thus the difference in field strength, between a tag and receiver decreases and then increases. The position and orientation of the tag within the doorway are not determined, and only the magnitude of the distance from the receiver.

Stephen does not teach or suggest a tracking system determining a position and orientation of a transponder in relation to a reference coordinate system. Rather, Stephen simply detects the change from a shorter distance to a greater distance rather than tracking a position and an orientation of a transponder. Claim 13 has been amended to recite determining a position and orientation of a transponder in relation to a reference coordinate system. Any approximate position of Stephen does not appear to include the position and orientation of a transponder in relation to a reference coordinate system as recited in claim 13. Stephen makes no mention of detecting the orientation of a transponder in relation to a reference coordinate system. Claim 13 recites a tracking system that is capable of determining a position and orientation of a transponder of a transponder in relation to a reference coordinate system. These limitations are neither

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taught nor fairly suggested by Stephen. Thus, the Applicant respectfully submits that amended independent claim 13 and corresponding dependent claim 14 are not taught or suggested by Stephen. Therefore, the Applicant respectfully submits that claims 13-14 are in condition for allowance.

The Applicant next turns to the rejection of claims 1-2, 8-9, 15-18, and 28-29 under 35 U.S.C. 102(b) as being anticipated by Herman. Herman generally relates to frequency dividers. (col. 1, lines 7-8). As shown in Fig. 1, Herman consists of an inductor L1 connected in parallel with a diode D1 to define a parallel resonant circuit. (col. 2, lines 57-60). As noted by the Examiner, (page 4 of the Office Action) Herman does not teach tracking position as recited in independent claims 1, 8, 15, and 28. Furthermore, Herman does not teach including a switching device connected in parallel with a coil to alter characteristics of a response signal. Rather, Herman simply detects the presence of a tag rather than tracking at least one of a position and an orientation of a transponder in relation to a reference coordinate system.

Claims 1 and 28 have been amended to recite that the tracking system is capable of determining at least one of a position and orientation of the transponder in relation to a reference coordinate system based at least in part on the signal. Claim 28 also recites that a switching device connected in parallel with the coil alters characteristics of the response signal. Claims 8 and 15 have also been amended to recite that the tracking system is capable of determining at least one of a position and orientation of the transponder in relation to a reference coordinate system based at least in part on the signal.

Thus, the Applicant respectfully submits that independent claims 1, 8, 15, and 28 and corresponding dependent claims 2, 9, 16-18, and 29 are not taught or suggested by Herman. Additionally, as described above, Stephen does not teach or fairly suggest a position and orientation tracking system or introducing characteristics into a response signal. Any combination of Herman and Stephen also does not teach or fairly suggest all of the limitations of independent claims 1, 8, 15 and 28 or their dependent claims. Therefore, the Applicant respectfully submits that claims 1-2, 8-9, 15-18, and 28-29 are in condition for allowance.

The Applicant next turns to the rejection of claims 1-3, 5, 7-12, 15-29 and 32-34 under 35 U.S.C. 103(a) as being unpatentable over Augenblick in combination with Carney and Stephen. Augenblick relates to a “recognition system for identifying one or more groups of harmonic generating targets.” (col. 1, lines 6-8). More specifically, Augenblick relates to “personnel and object identification systems.” (col. 1, lines 8-10). Augenblick discloses a recognition system that “reliably detects the presence of a particular harmonic generating target.” (col. 4, lines 51-54) (emphasis added).

Carney relates to “RF tagging systems in which the resonant frequencies of resonant circuits on a tag are detected to recover an identification code.” (col. 1, lines 7-10). More specifically, Carney relates to “an improved RF tagging system wherein an RF tag includes at least one resonant circuit having selectable capacitive and/or inductive components for being resonant at selected ones of different frequencies in a predetermined time sequence corresponding to a predetermined identification code and

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an external reader for detecting the selected resonant frequencies and decoding the time sequence of the selected resonant frequencies for recovering the predetermined identification code.” (col. 1, lines 10-20). Thus, Carney is a variant of an RFID system and not a position and orientation tracking system.

Neither Augenblick nor Carney, alone or in combination, teach or suggest a tracking system as recited in independent claims 1, 8, 15, 21, 22, and 28. Rather, Augenblick and Carney simply identify the presence of a target having a certain identification code rather than tracking at least one of a position and an orientation of a transponder in relation to a reference coordinate system. The claims of the present application recite that the transponder is used in a wireless electromagnetic tracking system for determining position and orientation of the transponder in relation to a reference coordinate system. Claims 1 and 28 recite a tracking system that is “capable of determining at least one of a position and orientation of [a] transponder in relation to a reference coordinate system.” Claims 8 and 15 recite that tracking includes “determining at least one of a position and orientation of [a] transponder in relation to a reference coordinate system.” Claims 21 and 22 have also been amended to recite that tracking includes “determining at least one of a position and orientation of [a] transponder in relation to a reference coordinate system.” As discussed above in greater detail, Stephen suffers from similar deficiencies when compared with the presently pending claims, as amended. Thus, the Applicant respectfully submits that independent claims 1, 8, 15, 21, 22, and 28 and corresponding dependent claims 2-3, 5, 7, 9-12, 16-20, 23-29, and 32-34 are not taught or fairly suggested by Augenblick, Carney and Stephen, alone or in

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combination. Therefore, the Applicant respectfully submits that claims 1-3, 5, 7-12, 15-29 and 32-34 are in condition for allowance.

The Applicant next turns to the rejection of claims 30-31 under 35 U.S.C. 103(a) as being unpatentable over Augenblick, Carney and Stephens in further view of Murdoch. Murdoch relates to “electronic and inductive communication apparatus.” (col. 1, lines 5-6). More specifically, Murdoch relates to a passive transponder that relates to “a portable, integrated and relatively cheap apparatus advantageously adapted for interrogation and/or identification of an article with which the transponder is associated.” (col. 1, lines 6-15).

As discussed above, Augenblick, Carney and Stephens, taken alone or in combination, do not teach or fairly suggest such a tracking system as recited in independent claim 28, from which claims 30-31 depend. Further, Murdoch also does not teach or suggest a tracking system as recited in independent claim 28. Rather, Murdoch simply allows for the identification of an article associated with a transponder rather than tracking at least one of a position and an orientation of a transponder. Therefore, the Applicant respectfully submits that claims 30-31 are in condition for allowance.

The Applicant next turns to the rejection of claims 4, 6, and 31 under 35 U.S.C. 103(a) as being unpatentable over Augenblick, Carney and Stephens in further view of Walton. Walton relates to an identification system “wherein a plurality of portable card

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type identifiers can be individually distinguished for authorizing financial transactions, for security purposes and similar individual identification.” (col. 1, lines 11-15).

As discussed above, none of Augenblick, Carney or Stephens, alone or in combination, teach or suggest a tracking system as recited in independent claims 1 and 28, from which claims 4, 6, and 31 depend. Further, Walton also does not teach or suggest a tracking system as recited in independent claim 28. Rather, Walton simply allows for a plurality of identifiers to be distinguished rather than tracking at least one of a position and an orientation of a transponder. Therefore, the Applicant respectfully submits that claims 4, 6, and 31 are in condition for allowance.

Additionally, new dependent claims 35-41 have been added. Dependent claims 35-38 depend from independent claim 1. Dependent claim 35 further recites determining a position and an orientation of the transponder of independent claim 1. Dependent claim 36 further includes determining at least one a position and orientation in relation to the anatomy of patient. Dependent claim 37 recites the transponder of claim 1 operating in conjunction with a medical device that is located within a patient anatomy. Dependent claim 38 recites the tracking system of claim 1 overlaying the reference coordinate system on to a medical image. As stated above, independent claim 1 is respectfully submitted to be in condition for allowance. As such, dependent claims 35-38 are also respectfully submitted to be in condition for allowance.

Dependent claims 39-41 depend from independent claim 8. Dependent claim 39 further includes the determining at least one position and at least one orientation of the



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transponder in relation to the reference coordinate system of claim 1. The dependent claim 40 further recites a tracking system of claim 8 capable of determining at least one of a position and orientation within a patient anatomy. The dependent claim 41 further includes relating the reference coordinate system of claim 8 to a medical image. As stated above, independent claim 8 is respectfully submitted to be in condition for allowance. As such, dependent claims 39-41 are also respectfully submitted to be in condition for allowance.

The Applicant respectfully submits that the pending claims are also patentable over the prior art made of record and not relied upon by the Examiner.

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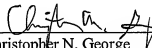
**CONCLUSION**

It is submitted that the present application is in condition for allowance and a Notice of Allowability is respectfully solicited. If the Examiner has any questions or the Applicant can be of any assistance, the Examiner is invited and encouraged to contact the Applicant at the number below.

The Commissioner is authorized to charge any necessary fees or credit any overpayment to the Deposit Account of GTC, Account No. 07-0845.

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Respectfully submitted,

  
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